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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,097	08/18/2003	Warran B. Lineton	71024-023	3347

59582 7590 10/03/2006

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EXAMINER	
STAICOVICI, STEFAN	

ART UNIT	PAPER NUMBER
1732	

DATE MAILED: 10/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/643,097	LINETON, WARRAN B.	
	Examiner	Art Unit	
	Stefan Staicovici	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Remarks

1. In view of Applicant's remarks in the Appeal Brief filed July 21, 2006 and newly discovered prior art, prosecution of the instant application is re-opened. As such, the finality of the rejection of the last Office action is withdrawn and a new non-final rejection is presented below.

Claims 1-9 are pending in the instant application.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thorsrud (US Patent No. 4,968,726) in view of Encyclopedia of Polymer Science and Technology (1966) (hereinafter, "Encyclopedia").

Thorsrud ('726) teach the basic claimed process, including providing a mixture of ultra high molecular weight polyethylene (UHMWPE) and a susceptor material, feeding the mixture to an extruder, extruding said mixture into a preform (continuous flow...compaction zone)(compacting) and feeding said extrudate to a microwave oven for sintering by exciting the susceptor material under microwave radiation (see col. 9, lines 42-50).

Regarding claims 1 and 8, although Thorsrud ('726) teaches materials that are not receptive to radio-frequency heating, *i.e.*, UHMWPE, Thorsrud ('726) does not teach a polytetrafluoroethylene (PTFE) resin. However, the Encyclopedia teaches that polyethylene (PE) and PTFE are equivalent alternative materials with respect to their capacity for radio-frequency heating (see page 7). That is, both resins cannot be heated by radio-frequency energy. Because UHMWPE has the same structure as PE, it is submitted that UHMWPE will have the same response as PE when placed in a radio-frequency field. That is, similar to PE, UHMWPE cannot be heated by radio-frequency energy. Further, the Encyclopedia teaches that radio-frequency heating is obtained when a high-loss material is combined with the low-loss material (see page 8). Hence, in view of the teachings of the Encyclopedia that PE and PTFE are equivalent alternative with respect to radio-frequency heating, it would have been obvious for one of ordinary skill in the art to use a PTFE resin as an equivalent alternative to the UHMWPE resin in the process of Thorsrud ('726) in view of Encyclopedia because, PE and PTFE are equivalent alternative with respect to radio-frequency heating and also because Thorsrud ('726) specifically teach materials that are not receptive to radio-frequency heating, hence suggesting the PTFE resin of the Encyclopedia.

In regard to claim 6, although Thorsrud ('726) teaches an extrudate, Thorsrud ('726) in view of Encyclopedia do not teach a tubular extrudate. However, extruding a mixture in a tubular form is well known. Therefore, it would have been obvious for one of ordinary skill in the art to provide a tubular extrudate in the process of Thorsrud ('726) in view of Encyclopedia because of known advantages such as, well-known equipment, ease of operation and processability.

Specifically regarding claim 7, Thorsrud ('726) teaches a microwave, hence teaching microwave energy (see col. 9, line 44).

4. Claims 2, 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thorsrud (US Patent No. 4,968,726) in view of Encyclopedia of Polymer Science and Technology (1966) (hereinafter, "Encyclopedia") and in further view of Dolan (US Patent No. 5,646,192).

Thorsrud ('726) in view of the Encyclopedia teaches the basic claimed process as described above.

Regarding claims 2 and 9, Thorsrud ('726) in view of the Encyclopedia do not teach applying a vacuum during sintering. However, applying a vacuum during sintering is well known as evidenced by Dolan ('192) who teaches that when applying a vacuum during sintering the void content is reduced, hence the porosity of the resulting structure is controlled (see col. 9, lines 63-66). Therefore, it would have been obvious for one of ordinary skill in the art to provide a vacuum during sintering as taught by Dolan ('192) in the process of Thorsrud ('726) in view of the Encyclopedia because, Dolan ('192) teaches that the vacuum allows control of the degree of porosity, hence providing for an improved process control.

In regard to claim 4, Thorsrud ('726) teaches a cooling bath (see col. 9, lines 47-50).

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thorsrud (US Patent No. 4,968,726) in view of Encyclopedia of Polymer Science and Technology (1966) (hereinafter, "Encyclopedia") and in further view of Dolan (US Patent No. 5,646,192) and Adams *et al.* (US Patent No. 4,375,441).

Thorsrud ('726) in view of the Encyclopedia and in further view of Dolan ('192) teaches the basic claimed process as described above.

Regarding claim 3, although Thorsrud ('726) teaches that the microwave heating includes a system for maintaining the surrounding air at an elevated temperature, Thorsrud ('726) in view of Encyclopedia and in further view of Dolan ('192) do not teach a pre-heating station. Adams *et al.* ('441) teach a process for making sintered preforms including, providing a mixture of a rubber-modified nitrile resin and a susceptor material, feeding the mixture to an extruder, extruding said mixture into a preform (continuous flow...compaction zone)(compacting), feeding said mixture to a pre-heating station, further transferring said pre-heated extrudate to a dielectric oven for sintering by exciting the susceptor material under dielectric radiation, passing said sintered extrudate through a cooling zone and, cutting said sintered extrudate in a cutting station to form individual products (see col. 9, line 23 through col. 10, line 5). Therefore, it would have been obvious for one of ordinary skill in the art to provide a pre-heating station as taught by Adams *et al.* ('441) in the process of Thorsrud ('726) in view of Encyclopedia and in further view of Dolan ('192) because of known advantages such as, reduced sintering time, hence providing for an improved process.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thorsrud (US Patent No. 4,968,726) in view of Encyclopedia of Polymer Science and Technology (1966) (hereinafter, "Encyclopedia") and in further view of Adams *et al.* (US Patent No. 4,375,441).

Thorsrud ('726) in view of the Encyclopedia teaches the basic claimed process as described above.

Regarding claim 5, Thorsrud ('726) in view of Encyclopedia does not teach cutting the sintered product prior to cooling to room temperature. Adams *et al.* ('441) teach a process for making sintered preforms including, providing a mixture of a rubber-modified nitrile resin and a susceptor material, feeding the mixture to an extruder, extruding said mixture into a preform (continuous flow...compaction zone)(compacting), feeding said extrudate to a dielectric oven for sintering by exciting the susceptor material under dielectric radiation, passing said sintered extrudate through a cooling zone and, cutting said sintered extrudate in a cutting station to form individual products (see col. 9, line 23 through col. 10, line 5). Therefore, it would have been obvious for one of ordinary skill in the art to provide a cutting station as taught by Adams *et al.* ('441) in the process of Thorsrud ('726) in view of the Encyclopedia because of known advantages such as increased productivity and also, because Thorsrud ('726) specifically teach forming individual products, *i.e.*, filters, hence suggesting the cutting station of Adams *et al.* ('441) to form individual products from the continuous, sintered extrudate.

7. Claims 1 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams *et al.* (US Patent No. 4,375,441 in view of Encyclopedia of Polymer Science and Technology (1966) (hereinafter, "Encyclopedia") and in further view of Thorsrud (US Patent No. 4,968,726).

Adams *et al.* ('441) teach a process for making sintered preforms including, providing a mixture of a rubber-modified nitrile resin and a susceptor material, feeding the mixture to an extruder, extruding said mixture into a preform (continuous flow...compaction zone)(compacting), feeding said mixture to a pre-heating station, further transferring said pre-heated extrudate to a dielectric oven for sintering by exciting the susceptor material under

dielectric radiation, passing said sintered extrudate through a cooling zone and, cutting said sintered extrudate in a cutting station to form individual products (see col. 9, line 23 through col. 10, line 5).

Regarding claims 1 and 8, although Adams *et al.* ('441) teach a rubber-modified nitrile resin, Adams *et al.* ('441) do not teach a PTFE resin. Nonetheless, Adams *et al.* ('441) teaches that the starting material may be any polymer composition having a high loss factor (see col. 4, lines 17-23). Further, by incorporating the teachings of the Encyclopedia, Adams *et al.* ('441), teaches that radio-frequency heating is obtained when a high-loss material is combined with the low-loss material (see page 8), hence teaching a polymer composition having a high loss factor. Further, the Encyclopedia, hence Adams *et al.* ('441), teaches that polyethylene (PE) and PTFE are equivalent alternative materials with respect to their capacity for radio-frequency heating (see page 7) because both resins cannot be heated by radio-frequency energy. As evidence that radio-frequency heating results when a high-loss material is combined with a low-loss material, the teachings of Thorsrud ('726) are provided. That is, Thorsrud ('726) teaches a microwave heating process, including providing a mixture of ultra high molecular weight polyethylene (UHMWPE) and a susceptor material, feeding the mixture to an extruder, extruding said mixture into a preform (continuous flow...compaction zone)(compacting) and feeding said extrudate to a microwave oven for sintering by exciting the susceptor material under microwave radiation (see col. 9, lines 42-50). Finally, it is noted that because UHMWPE has the same structure as PE, it is submitted that UHMWPE will have the same response as PE when placed in a radio-frequency field. That is, similar to PE, UHMWPE cannot be heated by radio-frequency energy. Therefore,

in view of the teachings of Thorsrud ('726) showing that radio-frequency heating results when a high-loss material is combined with a low-loss material, *i.e.*, UHMWPE, it would have been obvious for one of ordinary skill in the art to provide the PTFE resin of the Encyclopedia as an alternative to the rubber-modified nitrile resin in the process of Adams *et al.* ('441) because of known advantages that PTFE provides such as increased thermal and chemical resistance and, improved releasability, hence providing for an improved product and also because, Adams *et al.* ('441) teaches that the starting material may be any polymer composition having a high loss factor, hence suggesting the PTFE mixture of the Encyclopedia.

In regard to claim 5, Adams *et al.* ('441) teach cutting said sintered extrudate in a cutting station to form individual products (see col. 10, line 1-4).

Specifically regarding claim 6, although Adams *et al.* ('441) teaches an extrudate, Adams *et al.* ('441) in view of the Encyclopedia and in further view of Thorsrud ('726) do not teach a tubular extrudate. However, extruding a mixture in a tubular form is well known. Therefore, it would have been obvious for one of ordinary skill in the art to provide a tubular extrudate in the process of Adams *et al.* ('441) in view of the Encyclopedia and in further view of Thorsrud ('726) because of known advantages such as, well-known equipment, ease of operation and processability.

Specifically regarding claim 7, Adams *et al.* ('441) teach microwave energy (see col. 3, lines 13-14).

8. Claims 2-4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams *et al.* (US Patent No. 4,375,441 in view of Encyclopedia of Polymer Science and Technology

(1966) (hereinafter, "Encyclopedia") and in further view of Thorsrud (US Patent No. 4,968,726) and Dolan (US Patent No. 5,646,192).

Adams *et al.* ('441) in view of the Encyclopedia and in further view of Thorsrud ('726) teaches the basic claimed process as described above.

Regarding claims 2 and 9, Adams *et al.* ('441) in view of the Encyclopedia and in further view of Thorsrud ('726) do not teach applying a vacuum during sintering. However, applying a vacuum during sintering is well known as evidenced by Dolan ('192) who teaches that when applying a vacuum during sintering the void content is reduced, hence the porosity of the resulting structure is controlled (see col. 9, lines 63-66). Therefore, it would have been obvious for one of ordinary skill in the art to provide a vacuum during sintering as taught by Dolan ('192) in the process of Adams *et al.* ('441) in view of the Encyclopedia and in further view of Thorsrud ('726) because, Dolan ('192) teaches that the vacuum allows control of the degree of porosity, hence providing for an improved process control.

In regard to claim 3, Adams *et al.* ('441) teach a pre-heating station (see col. 10, lines 6-35).

Specifically regarding claim 4, Adams *et al.* ('441) teach a cooling zone (see col. 9, lines 63-67), whereas Thorsrud ('726) teaches a cooling bath (see col. 9, lines 47-50).

Response to Arguments

9. Applicant's arguments filed July 21, 2006 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (571) 272-1208. The examiner can normally be reached on Monday-Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson, can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stefan Staicovici, PhD

Stefan Staicovici

Primary Examiner 9/28/06

AU 1732

September 28, 2006